

## GG 140 - The Atmosphere, the Ocean and Environmental Change with Professor Ronald B. Smith

### Lecture 20 – Ocean Water Density and Atmospheric Forcing

1. Typical ocean soundings. Image credit: The Earth Institute of Columbia.  
[http://ocp.ldeo.columbia.edu/climatekidscorner/whale\\_dir.shtml](http://ocp.ldeo.columbia.edu/climatekidscorner/whale_dir.shtml) (Accessed Oct. 20, 2011)
2. Salinity and depth. Image credit: unknown. <http://astro.wsu.edu/worthey/earth/html/lecture23.html> (Accessed Oct. 20, 2011)
3. Salt in the sea. Image credit: unknown. <http://earth.usc.edu/classes/geol150/stott/variability/deepocean.html> (Accessed Oct. 20, 2011)
5. Temperature, salinity and density for major oceans. Image credit: unknown. <http://www.seafriends.org.nz/oceano/seawater.htm> (Accessed Oct. 20, 2011)
7. Great Salt Lake. Image credit: USGS EarthShots. <http://ut.water.usgs.gov/greatsaltlake/> (Accessed Oct. 20, 2011)
8. Evaporation-precipitation. Image credit: unknown. [http://www.ecmwf.int/research/era/ERA-40 Atlas/docs/section\\_B/charts/B12\\_LL\\_YEA.html](http://www.ecmwf.int/research/era/ERA-40 Atlas/docs/section_B/charts/B12_LL_YEA.html) (Accessed Oct. 20, 2011)
9. Winds over the ocean. Image credit: adapted from M. Tomczak and J.S. Godfrey (1994) Regional Oceanography: An Introduction, London: Pergamon. <http://people.hofstra.edu/geotrans/eng/ch1en/conc1en/windpatterns.html> (Accessed Oct. 20, 2011)
11. Ekman Layer. Image credit: adapted from Thurman, Harold V. Essentials of Oceanography, 5th ed. Prentice-Hall, Inc., 1996  
[http://www-pord.ucsd.edu/~ltalley/sio210/dynamics\\_ekman/index.html](http://www-pord.ucsd.edu/~ltalley/sio210/dynamics_ekman/index.html) (Accessed Oct. 20, 2011)
24. Atlantic Ocean thermohaline circulation. Image credit: unknown.  
<http://mail.tku.edu.tw/086138/EnvFutures/WebPages/Global%20warming/Thermohaline%20Circulation.htm> (Accessed Oct. 20, 2011)
25. Atlantic vs Pacific salinity. Image credit: unknown. <http://www.seafriends.org.nz/oceano/seawater.htm> (Accessed Oct. 20, 2011)

26. Thermohaline conveyor belt circulation. Image credit: unknown. <http://politicalclimate.wordpress.com/2010/03/> (Accessed Oct. 20, 2011)

27. Estuary circulation. Image credit: unknown. <http://www.stonybrook.edu/soundscience/> (Accessed Oct. 20, 2011)

30. Winds over the ocean. Image credit: adapted from M. Tomczak and J.S. Godfrey (1994) Regional Oceanography: An Introduction, London: Pergamon. <http://people.hofstra.edu/geotrans/eng/ch1en/conc1en/windpatterns.html> (Accessed Oct. 20, 2011)